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LETTER REGARDING SECONDARY EXCEEDANCES EVALUATION RESULTS AND
RECOMMENDATIONS NTC ORLANDO FL
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ABB ENVIRONMENTAL

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Southern Division
Naval Facilities Engineering Command
ATTN: Wayne Hansel, Code 187300
P.O. Box 190010
Charleston, SC 24919-9010

Dear Wayne:

**SUBJECT: Secondary Standards Exceedances Evaluation
Results and Recommendations
NTC, Orlando**

Due to FDEP concerns regarding the exceedances of certain secondary standards (primarily aluminum, iron, and manganese) in groundwater at a number of sites at NTC, Orlando, the transfer of several of these parcels may be delayed pending further evaluation. There are 20 sites with exceedances of secondary standards for one or more of the 3 metals listed above. Fourteen of the sites are at McCoy Annex and four are at Main Base. The other two sites are at Area "C" (SA 12) and Herndon Annex (SA 2). The twenty sites with secondary exceedances are: SAs 2, 8, 13, 16 through 21, 23 through 26, 39, 44, 45, 48 through 50, and 52. ABB-ES has reevaluated these exceedances by:

- Resampling certain monitoring wells on a case-by-case basis to confirm secondary standards exceedances; and
- Compiling a table which compares secondary standards detections of aluminum, iron and manganese with turbidity and/or total suspended solids data to determine if there is a relationship.

With regard to the first bullet item, resampling has occurred at SAs 8, 18, and 25. Resampling in SA 8 (former wastewater treatment plant lagoons) of well OLD-08-05 occurred because manganese was detected at a concentration of 69.9 µg/l, which exceeded the Florida secondary drinking water standard (odor, taste) of 50 µg/l. The manganese concentration measured in the resampling event (08G00502) was even higher at 97.4 µg/l. In SA 18 (housing office), well OLD-18-01 was resampled because of exceedances of aluminum (65,600 µg/l versus a background screening value of 4,061 µg/l), iron (23,400 µg/l versus a background screening value of 1,512 µg/l) and manganese (53.5 µg/l), as well as three other metals. The aluminum, iron and manganese concentrations measured in the resampling event were 5,620 µg/l, 5,410 µg/l, and 27.6 µg/l, respectively. In SA 25 (former domestic wastewater treatment plant), well OLD-25-03 was resampled because of an exceedance of the secondary standard for manganese (241 µg/l). The manganese concentration measured in the resampling event was 662 µg/l.

Regarding the second bullet item (above), ABB-ES has evaluated the data set (distributed in tabular form at the January OPT meeting) regarding the relationship between exceedances of background screening values for aluminum, iron and manganese and turbidity. While there is not a one-for-one relationship between concentrations of manganese and turbidity, there is a relationship between the concentrations of aluminum and iron and turbidity. For those samples where NTUs are less than 100 (from a data set of 116 samples), the mean of aluminum and iron detections is 1,553 µg/l (versus a background screening value of 4,061 µg/l) and 1,512 µg/l (versus a background screening value of 1,227 µg/l), respectively. Two samples, U1G02801 and 17G02401 were not included in these calculations, as they were considered outliers. For those samples where NTUs are 100 or greater (17 samples), the mean of aluminum and iron detections is 18,396 µg/l and 4,898 µg/l, respectively. Thus, although we cannot predict the concentrations of these metals by measuring the turbidity of a sample, we can state that samples with high NTUs (100 or greater) have a high likelihood of having concentrations of aluminum and iron that exceed background screening values.

ABB-ES has also evaluated the soil boring logs for the wells where there are exceedances of background screening values for secondary standards. One might reasonably expect that strata containing a clay fraction, clay-rich zones, or iron-rich soils would be present in some or most of the screened intervals for the subject wells. But the evaluation did not reveal any trends that would explain a relationship between exceedances of background screening values and lithology.

Most recently, ABB-ES has prepared a brief discussion that could be tailored to each individual study area to better explain the occurrence of secondary standards. The discussion is presented below, and will be preceded by a description of the secondary standards that were exceeded, which samples have those exceedances, and a comparison to the individual Florida secondary standards for each exceedance:

"Secondary standards have been established for Class G-I and G-II aquifers by the State of Florida, largely along Federal guidelines, to assure that groundwater meets at least minimum criteria for taste, odor, and color. Secondary standards were not established for human health, cancer risk, or ecological risk considerations, but, nonetheless, they are enforceable in the State of Florida.

A description of past site activities was included in Chapter X. Based on records reviews and interviews, there have been no known site activities that may have contributed to the observed exceedances of secondary standards for [list only those TAL metals that had exceedances, not organics for which there are secondary standards]. [Surface and/or subsurface] soil concentrations of these analytes did not exceed background screening concentrations [if true]. The sample(s) was [somewhat to very] turbid (XYZ NTUs) and/or had XYZ mg/l suspended solids, suggesting that suspended solids may have contributed to the observed secondary standard exceedances [if true]. There were no other TAL metals exceedances, and groundwater parameters measured during sampling (pH, temperature, conductivity, and turbidity) were within normal limits [if true]. ABB-ES concludes that the [TAL metals exceeding secondary standards] are naturally-occurring, are not related to past site activities, and do not pose a risk to human health or the environment."

ABB-ES believes the inclusion of the above in the findings for each affected study area, appropriately modified to the existing data, will help to address concerns of secondary standards exceedances. It may also be necessary to advise the future owner on a case-by-case basis of secondary standards exceedances and how these exceedances may relate to groundwater quality in the surficial aquifer.

Please call me if you have any questions concerning this letter.

Very Truly Yours,

ABB ENVIRONMENTAL SERVICES, INC.

John P. Kaiser
Installation Manager

cc: File
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